CLAIMS

What is claimed is:

1. A method for making an electrical inductor, the method comprising:

determining a desired magnetic volume of the inductor;

determining a desired area of a primary heat dissipation surface; and

determining remaining dimensions of the inductor based upon the magnetic volume and the primary heat dissipation surface area,

2. The method of claim 1, wherein the inductor has a cylindrical configuration, and the primary heat dissipation surface is a base surface having a predetermined diameter.

4. The method of claim 1, wherein the remaining dimensions of the inductor are determined such that the inductor has a height less than 40 percent of the diameter of the base surface.

5. The method of claim 4, wherein the inductor has a height less than 30 percent of the diameter of the base surface.

6. The method of claim 5, wherein the inductor has a height less than 20 percent of the diameter of the base surface.

9. The method of claim 6, wherein the primary heat dissipation surface is a base surface of the inductor.

10. The method of claim 1, wherein the primary heat dissipation surface is configured to dissipate heat from the inductor via a conductive heat transfer mode.

11. The method of claim 1, wherein the remaining dimensions of the inductor include a height dimension.

12. The method of claim 1, wherein remaining dimensions of the inductor are determined such that lateral side surfaces have a collective area less than the desired area of the primary heat dissipation surface.

13. The method of claim 1, wherein the remaining dimensions of the inductor are determined such that the

14. An electrical inductor made in accordance with the method of claim 1.

15. An electrical inductor comprising:

a predetermined magnetic volume;

a primary heat dissipation surface having a desired surface area configured to transfer heat from the inductor in a conductive move of heat transfer; and

at least one lateral side surface configured to transfer heat in a convective mode of heat transfer, all side surfaces having a collective area less than the desired area of the primary heat dissipation surface.

16. The electrical inductor of claim 15, wherein the primary heat dissipation surface is round and has a desired diameter, and the lateral side surface is a cylinder having a height computed by dividing the magnetic volume by the area of the primary heat dissipation surface.

17. The electrical inductor of claim 16, wherein the height is less than 40 percent of the diameter.

18. The electrical inductor of claim 17, wherein the height is less than 30 percent of the diameter.

19. The electrical inductor of claim 18, wherein the height is less than 20 percent of the diameter.

20. An electrical inductor comprising:

a predetermined magnetic volume;

a primary heat dissipation surface having a desired surface area configured to transfer heat from the inductor in a conductive move of heat transfer; and

at least one lateral side surface configured to transfer heat in a convective mode of heat transfer, all side surfaces having a collective area less than the desired area of the primary heat dissipation surface;

wherein the primary heat dissipation surface is round and has a desired diameter, and the lateral side surface is a cylinder having a height computed by dividing the magnetic volume by the area of the primary heat dissipation surface.

21. The electrical inductor of claim 20, wherein the height is less than 40 percent of the diameter.

22. The electrical inductor of claim 21, wherein the height is less than 30 percent of the diameter.

23. The electrical inductor of claim 22, wherein the height is less than 20 percent of the diameter.

24. An electrical inductor comprising:

a predetermined magnetic volume;

a primary heat dissipation surface having a desired surface area configured to transfer heat from the inductor in a conductive move of heat transfer; and

at least one lateral side surface configured to transfer heat in a convective mode of heat transfer, all side surfaces having a collective area less than the desired area of the primary heat dissipation surface;

wherein the primary heat dissipation surface is round and has a desired diameter, and the lateral side surface is a cylinder having a height computed by dividing the magnetic volume by the area of the primary heat dissipation surface, and wherein the height is less than 40 percent of the diameter.

25. The electrical inductor of claim 24, wherein the height is less than 30 percent of the diameter.

26. The electrical inductor of claim 25, wherein the height is less than 20 percent of the diameter.